



MAP BY ESRI GIS VIA CHNEP WATER ATLAS.

An estimated 350 miles of canals drain into Charlotte Harbor in Charlotte County, and an additional estimated 400 miles are within Lee County.

Charlotte Harbor: We Designed It This Way

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Charlotte Harbor may not be quite what we think — it is, in many ways, something we dug up ourselves.

Today, we collectively call them canals.

With an estimated 750 miles of canals within the Charlotte Harbor watershed, canals are a defining feature of our landscape and an integral part of daily life. They serve our community in practical ways — providing drainage and flood control, supporting irrigation, and conveying upstream water supplies. Well-functioning canals can also be aesthetically pleasing, enhance property values, serve as navigable waterways, and offer recreational opportunities.

Historically, canals were dug to drain wetlands and enable development. Early pioneers viewed wetlands as obstacles to progress, travel, housing, commerce, and even human health. While they did not understand the causes of diseases such as malaria and yellow fever, they recognized an association with wetland environments. Long before European settlement, Native Americans used these waters for transportation, fishing, drinking, irrigation, and drainage — depending on the harbor for their well-being, much as we do today.

Today, our perspective has shifted. We now better understand the immense value of wetlands and the role they play in maintaining healthy water resources. They provide renewable and often irreplaceable ecological services — improving water quality, supporting biodiversity, and sustaining the balanced ecology of receiving waters, including Charlotte Harbor itself. To understand the harbor, we must understand the waters that feed it: the Gulf,



PHOTO PROVIDED/CITY OF PUNTA GORDA VISITOR INFORMATION

A young man fishes along the Rim Canal opening at Ponce de Leon.

groundwater, rivers, rainfall — and canals. Of these, canal systems are perhaps the least ecologically understood.

Each canal system is different, and tidal canals in particular are complex and dynamic. In many ways, canals function as miniature estuaries — part storm-water system, part tidal creek, part retention basin. Freshwater canals have a distinctly different ecology, yet still share structural and functional traits with their saltwater counterparts. The

presence — or absence — of tides is a defining factor.

Along their length, canals can be divided into three general zones: the mouth, the mid-canal, and the upper reach. The canal mouth is the most dynamic, strongly influenced by tidal exchange. Its ecology most closely resembles the open estuary — waters are often clearer, more saline, and more biologically diverse. Oyster colonization may be extensive, seagrass beds may occur, and tidally mobile

fish such as spotted seatrout, snook, and redfish are often present.

Tides deliver both living food and organic material, while canals convey nutrients from upland drainage, leaf litter, and adjacent wetlands.

Mid-canal navigable sections are often dominated by seawalls, creating a more uniform environment. Even here, life persists. Pilings and walls are frequently covered with filter feeders.

Oysters may dominate where

salinity and clarity allow and are vital to canal ecology; mussels replace them where salinity is too low. Both provide habitat and food resources, but the American oyster remains an ecological keystone species — the mussel not so much. Residents can contribute to restoration efforts by deploying vertical oyster gardens (contact the Charlotte Harbor Environmental Center for more information).

Harbor/ from A8

Further upstream, canals can take on a more pond-like character, particularly where water control structures limit tidal exchange or where inflows are minimal. Bottom sediments are typically finer — often silty and sometimes anaerobic — supporting lower biological diversity and, at times, chronic algal blooms.

Still, even partially impounded reaches remain connected to the broader system, exchanging water, organisms, and chemistry during rainfall events and seasonal flows.

Canal bottoms also shift along this gradient. Near the mouth, sediments are often sandy or sandy silt, with shifting substrates that limit rooted plant growth. Vegetation tends to establish along edges where stability allows — particularly mangroves (also a keystone species), which are well adapted to these conditions.

Macroalgae attach to hard surfaces such as seawalls, debris, and roots. Moving upstream, sediments become finer and more organic-rich, reflecting slower water movement and increased deposition.

Water quality changes rapidly from the canal opening to the upper reaches. Moving upstream, nutrients and turbidity generally increase, while dissolved oxygen and



PHOTOGRAPH BY CARRIBEAN CASTAWAYS

Boaters await docking at the Riviera Bar and Grill, known for its resident snook and view of Alligator Creek and wetlands. Alligator Creek is at the near opening of an extensive residential and rural canal system.

biodiversity tend to decrease. The system transitions from a more production-based ecology at the mouth to a more decomposition-driven environment in mid- and upper reaches.

Limited water exchange in upper canals can lead to stagnation, oxygen loss, algal blooms, and occasional odors when sulfate-rich sediments are exposed. More mobile fish may leave under poor conditions; others persist through adaptation — or perish. Despite these

challenges, fish can remain abundant due to the diversity of habitats created by engineered structures and the presence of tolerant, opportunistic species.

Our community is fortunate to have both professionals and engaged citizens focused on maintaining the quality and accessibility of our canal systems. Advisory committees and local governments work to allocate limited resources toward protecting and improving these waterways.

In Charlotte County, with more than 350 miles of canals, achieving fully navigable, safe, and ecologically healthy waterways remains an ongoing challenge. Communities such as Punta Gorda, North Port, Englewood, and Cape Coral and their counties continue to prioritize canal maintenance and water quality.

You can help. Volunteer to clean up our canals and Charlotte Harbor. Too much trash, abandoned vessels, construction

debris, and plastic waste still find their way into our waters. For information on how to get involved, contact the County's Office of Water Quality Management and Resiliency, Florida Sea Grant, the Coastal & Heartland National Estuary Partnership, the Florida Department of Environmental Protection or your local canal or marine advisory committee.

Those and Keep Charlotte Beautiful is a important contact if you

are interested in joining a clean up campaign.

And beyond their function and ecology, canals are part of our daily lives. They are places for boating and fishing, for quiet reflection or gathering with friends, for watching wildlife, or simply enjoying the view.

But canals are not just conveniences or amenities — they are living systems. Understanding how they function is essential to protecting their health — and ultimately, the health of Charlotte Harbor itself.